Space Weather Forecast

Issued on Friday 14 February 2025 at 12:08 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Radio Blackouts (R1) throughout. Chance of minor geomagnetic storms (G1) gradually easing.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity remained at Moderate levels, with the peak flares two similarly-sized events at 14/0228UTC and 14/1006UTC. - the former from an arriving region on the southeastern solar horizon, and the latter from a sunspot region in the southeast.

There are currently up to nine sunspot regions on the facing side, however one of the regions responsible for the peak flare of the period will likely add to this tally of regions over the remainder of the UTC day as it rotates into view. The main changes in the period have been continued development in a sunspot region in the southwest, which saw a spreading tendency and a trend towards a more open character, however its trailing spot began to increase in size late in the period. Also of note is a region in the southeast, which saw some minor leading spot growth and the retention of a number of small pores circulating its large main spot. The main other changes were rapid growth of a new region in the south-centre, and a second region unusually developed within a 'coronal hole' in the southwest.

No Earth-directed Coronal Mass Ejections (CMEs) were observed in available imagery, although the increasing cadence of flares may yet reveal candidates once imagery becomes available.

Solar Wind / Geomagnetic Activity: Solar winds showed a probable ongoing connection to a fast wind, likely that emanating from a 'coronal hole' in the southwest. The solar wind speed trace was erratic due to the low solar wind density (number of particles comprising it) but showed an overall slight rise from slightly elevated to elevated levels by the period's end. The associated magnetic field showed a slight rise from background to slightly elevated levels. The north-south component varied, but was mainly anti-aligned with Earth's field to accentuate geomagnetic activity.

The net result of the above solar wind measures was a provisional peak just below Minor Geomagnetic Storm G1 in the UTC early hours of 14 February.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

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Met Office

Space Weather Forecast

Four-Day Space Weather Forecast Summary

Solar Activity: There is a daily chance of isolated Moderate-class flares, with a level trend now expected (barring development) in the absence of any significant departures or arrivals.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current fast winds from a large 'coronal hole' are expected to continue to gradually increase through day 1 (14 February), perhaps reaching strong speeds. Little change is then expected through much of the UTC weekend, before a gradual decline perhaps develops into day 4 (17 February). There is a chance of Minor Geomagnetic Storm G1 into the coming UTC weekend, waning in likelihood by the new working week.

Energetic Particles / Solar Radiation: There is a marginally increasing slight chance of a solar radiation storm S1 events given the westward progression of current active regions.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	40	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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